

ABSTRACT

A communication system emulator digitally emulates a plurality of signal impairments created by the transmitter and receiver components and communication medium in a typical communication system, for use in evaluating and refining modem design. A variety of linear and non-linear distortion characteristics are impressed on baseband signals between modulators and demodulators to evaluate and refine modem performance without requiring transmission frequency components or communication channel. The emulator comprises transmit modules, receive modules and communication media modules, and can accept or output analog or digital signals. Each module is configurable to allow modeling of simplex or duplex communication, or a common base station with multiple users transmitting or receiving, all configurations with or without communication media impairment emulation. Each module can be configured to add a plurality of linear and non-linear impairments to a baseband signal.